Resources

Ethnic and Gender Issues in Science, Technology, Engineering, and Math Courses: An Annotated Bibliography


Examines high school completion rates, college enrollment and graduation rates, and advanced degree attainment and employment.


Found that stereotype threat impeded women’s performance when completing difficult questions on the fundamentals of engineering exam and recommends that educators create learning climates where stereotype threat is diminished so that more women may succeed.

Investigated whether item format accounted for gender differences in mathematics performance and found results that suggest item difficulty, not format, may be the underlying cause.


Found that successful interventions for improving student performance included weekly workshop groups that were academically rigorous (non-remedial), cooperative (not competitive), facilitated by trained student peers who had successfully completed course and who provided encouragement and guidance without giving answers, and expressed strong trust in the ability of students to do challenging work.

**Breslow, L. (2001). Transforming novice problem solvers into experts.**

Offers several strategies for teaching problem-solving skills including modeling strategies, solution-planning, and problem analysis.


Identified departmental and institutional factors that contributed to the successful retention of female students in computer science.


Examined the effects of gender on teacher-student interactions and found generally that males interact more with teachers and that interactions differed according to the subject and gender of the teacher.


Suggests three areas for teacher preparation for culturally diverse classrooms including knowing students life experiences, researching literature on gender and cultural issues in science and math education, and developing strategies for dealing with student problems.

Suggests that increasing students' perceptions of self-efficacy and outcome expectations positively impact math-related career choices


Found that women’s test performance decreased relative to the number of males introduced in the testing environment and suggests that women may benefit from study in single-sex math environments


Found that increasing the applicability of negative stereotypes resulted in decreased performance by female high school students on difficult math exam


Investigated stereotype threat inducing conditions (e.g., difficult math exam) and found women test takers “underperformed”, but performed well when threat was removed (e.g., difficult literature exam, easy math exam, and/or difficult math exam presented as gender fair)


Studied factors that contribute to underperformance of women in science and engineering including male participation and interruption patterns, women’s distorted attributions for personal success, and negative peer interactions


Found that interventions designed to boost students’ self-efficacy and to increase women’s access to role models who successfully negotiate motherhood and careers related to higher level career achievement aspirations
Identifies obstacles for women pursuing careers in computer science including issues of self-esteem, access to role models and mentors, discrimination, and role conflict


Investigated the dual identities of Asian American women and found that activating the positive stereotype (e.g., Asians excel in mathematics) countered the stereotype threat of women as underperformers in mathematics


Found that stereotype threat can only be diminished when threat is directly attacked within a specific context (e.g., students told that a specific task is a fair and unbiased assessment of their abilities)


Found that among the highest achieving students (or those who had a stronger academic identity and skills), the fear of being associated with a negative stereotype impaired intellectual functioning and disrupted test performance regardless of preparation, ability, self-confidence, or motivation


Describes a collaborative partnership between Savannah State University (a Historically Black College) and Skidaway Institute of Oceanography to promote research experiences among African-American undergraduates in marine science and identifies key characteristics for the success of similar projects.

Found that the gender labeling of characters in the mathematical word problem was not the cause for performance differences between men and women on mathematical standardized tests, but that instead stereotype threat played a role.

Developed and annotated by Lois Reddick